

Floods

What to Know About Floods

Being educated about the nature of floods and the actions to take if one occurs is the best way to prepare. The more you know about floods, the better equipped you will be to make important safety decisions for you and your family. You should be aware of flood hazards no matter where you live, but especially if you live in a low-lying area, near water or downstream from a dam. Even very small streams, gullies, creeks, culverts, dry streambeds or low-lying ground that appears harmless in dry weather can flood.

Floods are one of the most common hazards in the United States. Flood effects can be local, impacting only one neighborhood or community, or very large, affecting entire river basins and multiple states. However, not all floods are alike.

- Some develop slowly, sometimes over a period of days.
- Flash floods can develop quickly, sometimes in just a few minutes and without any visible signs of rain. Flash floods often have a dangerous wall of roaring water carrying rocks, mud and other debris that can sweep away most things in its path.
- When a levee is breached or a dam fails, the overland flooding can produce effects similar to those caused by a flash flood.

Know the following terms and actions to take:

Flood watch:

- Flooding is possible. Tune to NOAA Weather Radio, commercial radio or television for information.
- Move your furniture and valuables to higher floors of your home.
- Fill your car's gas tank in case an evacuation notice is issued.

Flood warning:

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- Flooding is occurring or will occur soon. If advised to evacuate, do so immediately.
- Listen to local radio and TV stations for information and advice.

Flash flood watch:

- Flash flooding is possible. Be prepared to move to higher ground. Listen to NOAA Weather Radio, commercial radio or television for information.
- Be alert to signs of flash flooding and be ready to evacuate on a moment's notice.

Flash flood farming:

- A flash flood is occurring.
- Evacuate immediately. You may have only seconds to escape, so act quickly.
- Move to higher ground away from rivers, streams, creeks and storm drains.
- Do not drive around barricades; they are there for your safety.
- If your car stalls in rapidly rising waters abandon it immediately and climb to higher ground on foot.

Preparing For a Flood

Long-term home preparation:

- Know your area's flood risk and your elevation above flood level. If unsure, call your local Red Cross chapter, emergency management office or planning and zoning department.
- Contact community officials to find out if they are planning to construct barriers (levees, beams, floodwalls) to stop floodwater from entering the homes in your area.
- Avoid building in a flood-prone area unless you elevate and reinforce your home.
- Elevate the furnace, water heater and electric panel if they are in areas of your home that may be flooded. Consult with a professional for further information if this and other damage reduction measures can be taken.
- Seal the walls in your basement with waterproofing compounds to avoid seepage.
- Buy and install sump pumps with back-up power.
- Buy a fire extinguisher and make sure your family knows where it is and how to use it.

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- Have a licensed electrician raise electric components (switches, sockets, circuit breakers and wiring) at least 12" above your home's projected flood elevation.
- For drains, toilets and other sewer connections, install backflow valves or plugs to prevent floodwaters from entering.
- Identify potential home hazards and know how to secure or protect them before the flood strikes.
- Be prepared to turn off electrical power, gas and water supplies when there is standing water, fallen power lines or before you evacuate.
- Anchor fuel tanks to prevent them from being torn free and contaminating your basement. An unanchored tank outside can be swept downstream and damage other houses.
- Consider purchasing federally backed flood insurance through the National Flood Insurance Program or other insurance providers.

Long-term personal preparation:

- Learn about your community's emergency plans, warning signals, evacuation routes and locations of emergency shelters.
- Inform local authorities about any special needs of elderly, bedridden or disabled people.
- Assemble and maintain a disaster kit with essential documents, medications and food and water supplies in case you must evacuate.
- Have your immunization records handy or be aware of your last tetanus shot, in case you should receive a puncture wound or have a wound become contaminated during or after the flood.
- Keep insurance policies, important documents and other valuables in a safe-deposit box.
- Determine safe routes from home, work and school that are on higher ground.
- Keep your automobile gas tank filled; if electric power is cut off, fueling stations may not be able to operate pumps for several days.
- Plan and practice a flood evacuation routine with your family. Ask an out-of-state relative or friend to be the "family contact" in case your family is separated during a flood. Make sure everyone in your family knows the name, address and phone number of this contact person.
- Post emergency phone numbers at every phone.

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Short-term preparation:

- If it has been raining hard for several hours, or steadily raining for several days, be alert to the possibility of a flood. You may want to create a barrier between your house and rising water. To locate sandbag pick-up locations, call your local emergency management agency. It will be listed under city or county offices.
- If there is any possibility of a flash flood, you may not want to wait for instructions to seek higher ground. Once a flash flood warning is issued, you may have only seconds to escape.
- Listen to NOAA Weather Radio, local radio or TV stations for flood information and know the difference between a flood watch, a flood warning, a flash flood watch and a flash flood warning.
- Keep a portable radio, flashlight, extra batteries and light bulbs and other essential supplies on hand.
- Store drinking water in various containers and clean bathtubs in case water services are disrupted.
- Be aware of streams, drainage channels, canyons and other low-lying areas known to flood suddenly. Flash floods can occur in these areas with or without such typical warnings as rain clouds or heavy rain.
- Be prepared to evacuate and take your emergency kit with you.

Evacuating During a Flood

During a flood emergency the safest course of action may be to evacuate your home, work place, school or other location. Any emergency evacuation can be a stressful experience, but knowing what to do, where to go and how to get there safely will help you stay calm and get you and your family to refuge.

Flash flooding can happen at a moment's notice giving you only seconds to escape, so if you are advised to evacuate, you should do so immediately. Even if floodwaters have been rising over a longer period of time, once they reach a critical level, authorities will advise you to evacuate and you must act quickly.

Plan ahead:

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- Know your area's flood risk and your elevation above flood level. If unsure, call your local Red Cross chapter, emergency management office or planning and zoning department.
- Determine safe routes from home, work and school that are on higher ground.
- Fill your vehicle's gas tank and make sure the emergency kit for your car is ready.
- If no vehicle is available, make arrangements with friends or family for transportation.
- Identify essential documents such as medical records, insurance cards, ID cards and put them in water proof material to carry with you during evacuation.
- Fill your clean water containers.
- Adjust the thermostat on refrigerators and freezers to the coldest possible temperature.
- Listen to NOAA Weather Radio, local radio or TV stations for evacuation orders.
- Listen for disaster sirens and warning signals.
- If there is any possibility of a flash flood, you may not want to wait for instructions to seek higher ground. Once a flash flood warning is issued, you may have only seconds to escape.

Get out:

- You should NEVER ignore an evacuation order. Authorities will direct you to leave if you are in a low-lying area, or within the greatest potential path of the rising waters.
- If you are advised to evacuate you should take IMMEDIATE action. Just a few seconds can mean the difference between escaping the floodwaters and being trapped.
- Grab your emergency kit on your way out the door and make sure no one is left in the building.
- Secure your home ONLY if you are absolutely sure you have time to do so. You may also want to bring in outdoor furniture and move essential or valuable items to an upper floor.
- If you have time and if you are instructed to do so, turn off utilities at the main switches or valves. Disconnect electrical appliances, but do NOT touch electrical equipment if you are wet or standing in water.
- NEVER refuse to evacuate for the sake of a pet or other animal. Only if you are confident you have time should you worry about taking pets with you. Remember though, many shelters usually do NOT allow pets inside due to sanitary concerns.

Traveling in a vehicle:

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- Do NOT drive in flooded areas. If floodwaters rise around your car, abandon the car immediately and move to higher ground on foot. Act quickly, or you and the vehicle may be swept away.
- Remember, six inches of water will reach the bottom of most passenger cars causing loss of control and possible stalling.
- A foot (12 inches) of water will float many vehicles, and just two feet of rushing water can carry away most vehicles INCLUDING sport utility vehicles (SUVs) and pickups.
- NEVER drive through flooded roadways. Roadbeds may be washed out under floodwaters.
- Be especially cautious at night when it is harder to recognize high water danger.
- Road closure information is available from the Indiana State Police at <https://www.IN.gov/isp>. Click on “road and weather” and then click on “road conditions.” Road closings should be updated every four hours.

Traveling on foot:

- Do NOT walk through moving water. Six inches of moving water can knock you off your feet and swift currents can drag you under the surface.
- If you must walk through water, walk where the water is NOT moving. Use a stick, broom handle or other long object to check the firmness of the ground in front of you.
- If the weather is colder, remember the risk of hypothermia associated with being wet and cold.
- Avoid floodwaters that may be contaminated by oil, gasoline or raw sewage. Water may also be electrically charged from underground or downed power lines.
- Exercise extreme care when walking through water with children. Whenever possible, always have children wear a U.S. Coast Guard-approved life jacket to prevent drowning.
- If you find yourself stranded in floodwaters, remain calm and call 9-1-1 or yell for help. A panicking person is more likely to make wrong decisions. Only swim if you absolutely have to and do not swim against the current. If you are a rescuer, remember to throw a rope or flotation device to the person or row a boat out to them, but never go into the water yourself. A panicked swimmer may drag you under with them.

Shelter:

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- Seek high ground.
- Listen to your portable radio or other source to find out what action to take next.
- Stay out of any buildings surrounded by floodwaters.
- Keep away from buildings if their structural integrity has been compromised by water damage.
- Return home only when authorities indicate it is safe.
- All evacuees and those who evacuate are urged by the Red Cross to register on the “Safe and Well” at <https://disastersafe.redcross.org/>. This tool allows people in disaster-affected areas to register their well-being using several pre-scripted messages. Family and friends can then log on and search for registered individuals to learn of their whereabouts and safety. People without access to a computer or without electricity can call the Red Cross (1-800-RED-CROSS) for help registering, or contact a loved one to register on their behalf.

Never Drive Through Flood Waters

Before you go:

- Do not travel unless absolutely necessary. If you must travel, carry a cell phone with a car charger.
- Pay attention to your local media and heed all flood and flash flood warnings issued by the National Weather Service.
- Visit the Indiana State Police at <https://www.IN.gov/isp> and click on Road and Weather, and then click on Road Conditions. The road closings should be updated every four hours.

On the road:

- Be especially vigilant at night; many drownings and near deaths occur at night when it is difficult to see water crossings.
- Do not drive around barricades at water crossings. They are there for your protection.
- Do not cross or enter flowing water. Turn around, don't drown. If there is no other route, proceed to higher ground and wait for the waters to subside.
- Be aware that road erosion may occur under running or standing water. If you can't see the road, you can't be sure it's there.

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- Even if the water appears shallow enough to cross, do not attempt to cross a flooded road. Water can conceal dips, or worse, floodwaters can damage roadways, washing away the entire road surface and a significant amount of ground.
- Remember, six inches of water will reach the bottom of most passenger cars causing loss of control and possible stalling.
- A foot (12 inches) of water will float many vehicles, but even just a few inches of rushing water can carry away most vehicles INCLUDING sport utility vehicles (SUVs) and pickups.
- Slow down. Driving fast through high water creates less tire contact with the road surface and increases your chance of losing control of your vehicle.
- Driving through water may affect your brakes. Test your brakes at low speeds as soon as you exit the water.

Get out:

- If your car stalls, abandon it immediately and climb to higher ground.
- If you are forced to abandon your vehicle, respect the force of the water flow. After you exit the vehicle, seek higher ground or get on top of your car. Wait for help to arrive.
- If you find yourself stranded in floodwaters remain calm and call 9-1-1 or yell for help. A panicking person is more likely to make wrong decisions. If you can do so safely move to higher ground. Only swim if you absolutely have to and do not swim against the current. If you are a rescuer, remember to throw a rope or flotation device to the person or row a boat out to them, but never go into the water yourself. A panicked swimmer may drag you under with them.

What to do before a Dam Failure

A dam is a man-made barrier constructed for the purpose of storing or diverting water. It is usually built across a stream or river and usually consists of earthen materials or concrete. Many of the existing dams in Indiana are relatively old (30 years or more), making safety inspections and regular maintenance extremely important practices. Knowing your risk, the Emergency Action Plan (EAP) and when and how to evacuate as directed by emergency response officials are the most important steps you can take to stay safe if a dam fails.

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Dams:

- The Department of Natural Resources (DNR) regulates dams that meet one of three criteria:
 - The drainage area above the dam is greater than 1 square mile
 - The dam embankment is greater than 20 feet
 - The dam impounds more than 100-acre feet of water
- A high hazard dam is one in which its failure may cause the loss of life and serious damage to homes, industrial and commercial buildings, public utilities, major highways or railroads.
- A significant hazard dam is one in which its failure may damage isolated homes and highways, or cause temporary interruption of public utility services.
- A low hazard dam is one in which its failure may result in damage to farm buildings, agricultural land or local roads.
- There are about 250 high hazard, 250 significant hazard, and about 600 low hazard dams in Indiana.

Dam laws:

- The Indiana General Assembly has established dam safety laws to protect the citizens of the state. Generally, the laws are intended to ensure dam owners maintain his/her dam in a safe manner that minimizes potential safety risks downstream. Since dam owners can be held accountable for any damage that results from the failure of their dams, they should do whatever is necessary to avoid injuring persons or property.
- DNR has the statutory authority to regulate dams in Indiana and oversee the inspections of about 1,100 dams statewide.
- State law requires a DNR inspection of low hazard dams once every five years, and once every three years for significant hazard dams. Owners of high hazard dams are required to have an inspection once every two years.

Dam inspections:

- A responsible dam safety program should include four types of inspection—formal technical inspections, maintenance inspections, informal inspections and special inspections.

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- Formal technical inspections are the most comprehensive and usually include review and analysis of available data and plans, a field examination and a final report. The field inspection is performed by a team of one or more professional engineers, geologists or qualified technicians, accompanied by the dam owner or his/her representative.
- Depending on the type of dam, a field exam can take two to three days for a team of experts to complete and may cost the owner \$2,500 to \$4,000.
- An inspection is only a snapshot of the dam's relative safety status at the time. It provides the owner with information on necessary repairs but it is not a guarantee that the dam is safe. Year-round vigilance by the owner using informal inspection coupled with special inspections and proper maintenance practices are far better tools for ensuring the long-term integrity of a dam.
- Levees that are designed and built for flood control are also inspected. However, other agricultural structures only designed to divert water from crop fields, or to prevent topsoil erosion in the event of high water are not inspected.

Dam failures:

- Know your risk. To find out if you live downstream from a dam, whether it is a high or significant hazard structure and who owns and regulates it, contact your state or county emergency management agency, the National Inventory of Dams or the Association of State Dam Safety Officials.
- Know your EAP. Once you determine that you live downstream from a high or significant hazard dam, see if a current EAP is in place for the dam's failure. An EAP is a formal document that identifies potential emergency conditions at a dam and specifies preplanned actions to be followed to reduce property damage and loss of life.
- An EAP should also specify actions the dam owner should take to address problems at the dam as well as steps to assist the owner in issuing early warning and notification messages to responsible downstream emergency management authorities in the event of a potential or likely fail.
- Know when and how to evacuate. If there is a dam failure or an imminent dam failure and you need to evacuate, know your evacuation route and get out of harm's way.

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- In general, evacuation planning and implementation are the responsibility of the state and local officials responsible for your safety. However, there may be situations where recreational facilities, campgrounds or residences are located below a dam and local authorities will not be able to issue a timely warning. In this case, the dam owner should coordinate with local emergency management officials to determine who will warn you and in what priority.

Staying Safe after the Rain Stops

It is important to remember that flood dangers do not end when the water begins to recede. Buildings may have hidden damage or damage to gas, electric or water lines. The residual effects of floods, such as contaminated water, crumbled roads, landslides, mudflows and other hazards, can also be extremely dangerous. You can continue to help keep you and your family safe in the days and weeks following a major flood emergency by following these guidelines.

What to do next:

- If injured, seek necessary medical care at the nearest hospital or clinic. Remember, contaminated floodwaters create a great risk of infection, so severe injuries will require medical attention.
- All evacuees are urged by the Red Cross to register on the “Safe and Well” at <https://disastersafe.redcross.org/>. This tool allows people in disaster-affected areas to register their well-being using several pre-scripted messages. Family and friends can then log on and search for registered individuals to learn of their whereabouts and safety. People without access to a computer or without electricity can call the Red Cross (1-800-RED-CROSS) for help registering, or searching for a loved one.
- Continue listening to a weather radio, local radio or television stations for information updates. Return home ONLY when authorities indicate it is safe to do so. Buildings may have hidden damage or damage to gas, electric or water lines.
- Avoid disaster areas. Your presence might hamper rescue and other emergency operations and put you at further risk from the residual effects of floods, such as contaminated water, crumbled roads, landslides, mudflows and other hazards.

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- Report broken utility lines to the appropriate authorities. Reporting potential hazards will get the utilities turned off as quickly as possible, preventing further hazard and injury. Check with your utility company about where broken lines should be reported.
- Report oil spills, chemical spills and stray petroleum and home heating oil tanks to the Indiana Department of Environmental Management.

Health and wellness:

- Avoid floodwaters as they may be contaminated by oil, gasoline or raw sewage. Water may also be electrically charged from underground or downed power lines.
- Children should never play in floodwaters.
- Do NOT drink floodwater, which may be contaminated and avoid getting floodwater in eyes, nose and mouth. Individuals exposed to floodwater should wash their hands thoroughly with warm, soapy water. Follow directions from local officials regarding the safety of drinking water including well water.
- Once the floodwaters recede, the standing water remaining is ideal breeding grounds for mosquitoes that carry the West Nile virus and other diseases. Apply insect repellent containing DEET, Picardin, or oil of lemon eucalyptus to clothes and exposed skin to protect you and your family from mosquito bites.

Make sure your tetanus immunizations are up-to-date; any type of wound, major or minor, could be an entry source for the tetanus organism found in floodwater. Routine tetanus boosters are recommended every 10 years. For people who receive serious wounds, a tetanus booster is appropriate if they have not received one within the last 5 years. Tetanus vaccines are available from your primary health care provider or your local health department. A complete listing of local health departments is available on the State Department of Health Website at: <http://www.statehealth.IN.gov> by clicking on “Local Health Departments.”

Surviving a Landslide or Debris Flow

Landslides and debris flows occur in all U.S. states and territories. Being informed and taking appropriate protective measures will greatly mitigate the safety risks associated with these natural disasters. Landslides may be small or large, slow or rapid and are activated by storms, earthquakes,

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volcanic eruptions, fires, alternate freezing or thawing and steepening of slopes by erosion or human modification. Debris flows, sometimes referred to as mudslides, mudflows or debris avalanches, are common types of fast-moving landslides. Discussing disaster plans ahead of time can help reduce fear by ensuring everyone knows how to respond during a landslide or debris flow.

Be informed:

- Learn whether landslides or debris flows have occurred in your area by contacting local officials, state geological surveys, departments of natural resources and university departments of geology. Landslides generally occur where they have before, and in identifiable hazard locations.
- Learn what to watch for prior to a major landslide. Look for patterns of stormwater drainage on slopes near your home, noting especially the places where runoff water converges, increasing the flow over soil-covered slopes. Check hillsides around your home for any signs of land movement, such as small landslides or debris flows or progressively tilting trees.
- Develop an evacuation plan. You should know where to go if you have to leave. Trying to make plans at the last minute can be upsetting and create confusion more greatly endangering yourself and your family.
- Talk to your insurance agent. Debris flows may be covered by flood insurance policies from the National Flood Insurance Program (NFIP).
- Discuss landslides and debris flows with your family. Everyone should know what to do in case all family members are not together.

Protect your home and property:

- If your property is in a landslide-prone area, consider contracting with a private consulting company specializing in earth movement and landslide problems for advice on corrective measures you can take.
- Get a ground assessment of your property, and do not build near steep slopes, close to mountain edges, near drainage ways or natural erosion valleys.
- Have flexible pipe fittings installed to avoid gas or water leaks, as flexible fittings are more resistant to breakage. ONLY the Gas Company or professionals should install gas fittings.

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- Plant ground cover on slopes and rebuild retaining walls.
- In mudflow areas, build channels or deflection walls to direct the flow around buildings. Remember though, if you build walls to divert debris and the flow lands on a neighbor's property, you may be liable for damages.

Be alert during intense storms and rainfall:

- Many debris-flow fatalities occur when people are sleeping. Listen to NOAA Weather Radio, or portable, battery-powered radio or television for warnings of intense rainfall.
- Be aware that intense, short bursts of rain may be particularly dangerous, especially after longer periods of heavy rainfall and damp weather.
- Be aware of any sudden increase or decrease in water level on a stream or creek that might indicate an unfolding debris flow upstream. A trickle of flowing mud may precede a larger flow.
- Look for tilted trees, telephone poles, fences or walls, and for new holes or bare spots on hillsides.
- Listen for rumbling sounds that might indicate an approaching landslide or mudflow.
- Be especially alert when driving. Roads may become blocked or closed due to collapsed pavement or debris.

If you suspect an imminent landslide:

- If landslide or debris flow danger is imminent, evacuate! Quickly move away from the path of the slide. Getting out of the path of a debris flow is your best protection. Move to the nearest high ground in a direction away from the path.
- If rocks and debris are approaching, run for the nearest shelter and take cover (if possible, under a desk, table or other piece of sturdy furniture).
- Remember that driving during an intense storm can be hazardous. If you cannot safely evacuate, move to a second story if possible.
- If escape is not possible, curl into a tight ball and protect your head.
- Inform affected neighbors who may not be aware of potential hazards. Advising them of a potential threat may help save lives.

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- Help neighbors who may need assistance evacuating.
- Contact your local fire, police or public works department as they are best able to assess potential and unfolding danger.

What to Know About Mudslides

Landslides and debris flows occur in all U.S. states and territories. Being educated about them and the actions to take if one occurs is the best way to prepare. The more you know about these natural disasters, the better equipped you will be to make important safety decisions for you and your family.

In a landslide or debris flow masses of rock, earth or debris move down a slope. Landslides may be small or large, slow or rapid and activated by storms, earthquakes, volcanic eruptions, fires, alternate freezing or thawing and steepening of slopes by erosion or human modification.

Landslides:

- Landslides are a serious geologic hazard common to almost every state in the United States.
- Some landslides move slowly and cause damage gradually, whereas others move so rapidly that they can destroy property and take lives suddenly and unexpectedly.
- Gravity is the force driving landslide movement. Factors that allow the force of gravity to overcome the resistance of earth material include: saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, earthquake shaking and volcanic eruptions.
- Landslides are typically associated with periods of heavy rainfall or rapid snow melt and tend to worsen the effects of flooding that often accompany these events. In areas burned by forest and brush fires, a lower threshold of precipitation may initiate landslides.

Debris flows:

- Debris flows, sometimes referred to as mudslides, mudflows or debris avalanches, are common types of fast-moving landslides.

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- These flows generally occur during periods of intense rainfall or rapid snow melt. They usually start on steep hillsides as shallow landslides that liquefy and accelerate to speeds that are typically about 10 miles per hour, but can exceed 35 miles per hour.
- The consistency of debris flows ranging from watery mud to thick, rocky mud that can carry large items such as boulders, trees and cars.
- Debris flows from many different sources can combine in channels, augmenting their destructive power. They continue flowing down hills and through channels, growing in volume with the addition of water, sand, mud, boulders, trees and other materials. When the flows reach flatter ground, the debris spreads over a broad area, sometimes accumulating in thick deposits that can wreak havoc in developed areas.
- Wildfires can also lead to destructive debris-flow activity. In July 1994, a severe wildfire swept Storm King Mountain, west of Glenwood Springs, Colorado, denuding the slopes of vegetation. Heavy rains on the mountain in September resulted in numerous debris flows, one of which blocked Interstate 70 and threatened to dam the Colorado River.

Health threats:

- In the United States, landslides and debris flows result in 25 to 50 deaths each year.
- Rapidly moving water and debris can lead to trauma.
- Broken electrical, water, gas and sewage lines that can result in injury or illness.
- Disrupted roadways and railways can endanger motorists and disrupt transportation and access to health care.

Areas more likely to experience landslides or mudflows include:

- Areas where wildfires or human modification of the land have destroyed vegetation;
- Areas where landslides have occurred before;
- Steep slopes and areas at the bottoms of slopes or canyons;
- Slopes that have been altered for construction of buildings and roads;
- Channels along a stream or river; and
- Areas where surface runoff is directed.

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For more information:

- The Federal Emergency Management Agency (FEMA) has a fact sheet containing information on landslides and mudflows in the United States, as well as recommendations on how to prepare and behave during and after a landslide. <http://pubs.usgs.gov/fs/fs-0071-00/fs-0071-00.pdf>.
- The U.S. Geological Survey (USGS) has a fact sheet containing information on landslide hazards and characteristics. <http://pubs.usgs.gov/fs/fs-0071-00/fs-0071-00.pdf>.
- For information about reducing losses from landslides at the national, state and local levels, in both public and private sectors, review the following document: Spiker EC, Gori PL. National landslide hazards mitigation strategy -- a framework for loss reduction. U.S. Geological Survey Circular 1244 - Online Version 1.0, 2003. <http://pubs.usgs.gov/circ/c1244/>.

Building Safety

Remember that flood dangers do not end when the water begins to recede. Buildings may have hidden structural damage or damage to gas, electric or water lines. The residual effects of floods, such as contaminated water, crumbled roads, landslides, mudflows and other hazards can also be extremely dangerous. Your presence in disaster areas may hamper rescue and other emergency operations and put you at further risk. Therefore, although the desire to return home to evaluate damage and begin the recovery process is understandable, you should return home **ONLY** when authorities indicate it is safe.

- Return home **ONLY** when authorities indicate it is safe to do so.
- Stay out of any building if floodwaters remain around the building. Floodwaters often undermine foundations and cause sinking. Floors can crack or break and buildings can collapse.
- Report broken utility lines to appropriate authorities. Reporting potential hazards will get the utilities turned off as quickly as possible, preventing further hazard and injury. Check with your utility company about where broken lines should be reported.
- Once local officials indicate it is safe, use extreme caution when entering buildings. Damage may have occurred where you least expect it, so watch carefully every step you take.
- Wear sturdy shoes. The most common injury following a disaster is cut feet.

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- Use battery-powered lanterns or flashlights when examining buildings. Battery-powered lighting is the safest and easiest and avoids fire hazards.
- Examine walls, floors, doors, staircases and windows to ensure the building is not in danger of collapsing.
- Inspect foundations for cracks and other damage. Cracks and damage to a foundation can render a building uninhabitable.
- Look for fire hazards such as broken or leaking gas lines, flooded electrical circuits, submerged furnaces or electrical appliances. Flammable or explosive materials may travel from upstream. Fires are the most frequent hazard following floods.
- Watch out for animals, especially snakes that may have been flushed from their homes and into buildings with the floodwaters. Use a stick to poke through debris.
- Watch for loose plaster, drywall and ceilings that could fall.
- Take pictures of the damage, both of the building and its contents, for insurance claims.

What to Do After a Landslide or Debris Flow

Sometimes the most stressful moments actually occur after a landslide is over. Great quantities of mud and debris can leave behind a very chaotic and overwhelming scene. It is important to remain calm and try to keep the recovery process in perspective. You won't be able to do everything you need to do to recover all at once, but you can take steps toward that end.

Although the desire to return home to evaluate damage and begin the recovery process is understandable, premature presence in disaster areas may hamper rescue and other emergency operations and put you at further risk. Therefore, you should return to your home, office or any building ONLY when authorities indicate it is safe to do so. Once local officials indicate it is safe, use extreme caution when entering buildings. Damage may have occurred where you least expect it, so watch carefully every step you take.

Immediate hazard mitigation:

- Stay away from the slide area. There may be danger of additional slides.
- Watch for flooding, which may occur after a landslide or debris flow, as they may both be started by the same event.

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- Listen to local radio or television for updated emergency information.
- Without entering the direct slide area, check for injured and trapped persons near the slide, and assist them if you can do so without endangering yourself.
- Help neighbors who may require special assistance—infants, elderly people and people with disabilities. People who care for special needs individuals, or who have large families may also need additional assistance in emergency situations.

Protect yourself:

- Wear sturdy shoes. The most common injuries in a disaster are cuts to the feet.
- Avoid smoking inside buildings. Smoking in confined areas can cause fires.
- Use battery-powered lights when examining buildings to prevent potential shock and fire hazards.
- Watch out for animals that may have come into buildings with the floodwaters. Use a stick to poke through debris. Floodwaters flush many animals out of their homes.
- Keep children and pets away from hazardous sites and floodwater.

Evaluate the structure:

- Stay out of any building if floodwaters or mud remain around the building. Floodwaters often undermine foundations, causing sinking. Floors can crack or break and buildings can collapse.
- Inspect foundations for cracks or other damage which could render the building uninhabitable.
- Watch for loose plaster, drywall and ceilings that could fall.
- Take pictures of the damage, both of the building and its contents, for insurance claims.
- Pump out flooded basements gradually (about one-third of the water per day) to avoid structural damage. If the water is pumped completely in a short period of time, pressure from water-saturated soil on the outside could cause basement walls to collapse.

Evaluate utilities:

- If power lines are down outside your home, do not step in puddles or standing water.

Floods

- Do not connect the electricity back on in your home or business if you detect gas, or if the electrical system has been flooded or covered in slide debris.
- Look for electrical system damage. If you see sparks or broken or frayed wires or if you smell burning insulation, leave the house and call the fire department.
- Check for gas leaks. If you smell gas or hear a blowing or hissing noise, open a window and quickly leave the building. Turn off the gas at the outside main valve if you can and call the gas company from a neighbor's home or cell phone. If you turn off the gas for any reason, it must be turned back on by a professional.
- Check for sewage and water line damage. If you suspect sewage lines are damaged, avoid using the toilets and call a plumber. If water pipes are damaged, contact the water company or call a plumber and avoid using water from the tap.
- Service damaged septic tanks, cesspools, pits and leaching systems as soon as possible. Damaged sewage systems are health hazards. Contact your local health department before making repairs to septic systems.
- Report broken utility lines to the appropriate authorities. Reporting potential hazards will get the utilities turned off as quickly as possible, preventing further hazard and injury. Check with your utility company about where broken lines should be reported.

Pre-empt disease:

- Clean and disinfect everything that was touched by floodwaters or mudflow.
- Confirm the water supply is safe to drink. Listen for news reports to learn whether the community's water supply has been contaminated.
- Contaminated water may not be safe to drink, clean with or bathe in. Use only bottled, boiled or treated water until your water supply is tested and found safe.
- If water is of questionable purity, boil or add bleach and distill drinking water before using. Wells inundated by floodwaters or mud should be pumped out and the water tested for purity before drinking. If in doubt, call your local public health authority. Ill health effects often occur when people drink water contaminated with bacteria and germs. See http://www.IN.gov/dhs/files/water_treatment.pdf for more information.

Floods

- Throw away food that has come in contact with floodwaters. Some canned foods may be salvageable. If the cans are dented or damaged, throw them away. Food contaminated by floodwaters can cause severe infection.

Rebuilding:

- Replant damaged ground as soon as possible since erosion caused by loss of ground cover can lead to flash flooding.
- Seek the advice of a geotechnical expert for evaluating landslide hazards or designing corrective techniques to reduce landslide risk.

First-Time Home

Sometimes the most stressful moments actually occur after a flood emergency is over. As one of nature's most powerful resources, large quantities of water can leave behind a very chaotic and overwhelming scene. It is important to remain calm and try to keep the recovery process in perspective. You will not be able to do everything you need to do to recover all at once, but you can take steps toward that end.

It is important to remember that flood dangers do not end when the water begins to recede. Buildings may have hidden structural damage or damaged gas, electric or water lines. Your presence in disaster areas may hamper rescue and other emergency operations and put you at further risk. Therefore, although the desire to return home to evaluate damage and begin the recovery process is understandable, you should return to your home, office, or any building **ONLY** when authorities indicate it is safe to do so.

Once local officials indicate it is safe, use extreme caution when entering buildings. Damage may have occurred where you least expect it, so watch carefully every step you take.

Protect yourself:

- Wear sturdy shoes. The most common injuries following a disaster are cuts to the feet.
- Avoid smoking inside buildings. Smoking in confined areas can cause fires.

Floods

- Use battery-powered lights when examining buildings. This prevents potential shocks and fire hazards.
- Watch out for animals that may have been flushed from their homes and come into buildings with the floodwaters. Use a stick to poke through debris. Keep children and pets away from hazardous sites and floodwater.

Evaluate the structure:

- Stay out of any building if floodwaters remain around the building. Floodwaters often undermine foundations, causing sinking. Floors can crack or break and buildings can collapse.
- Inspect foundations for cracks or other damage which could render the building uninhabitable.
- Watch for loose plaster, drywall and ceilings that could fall.
- Take pictures of the damage, both of the building and its contents, for insurance claims.
- Pump out flooded basements gradually (about one-third of the water per day) to avoid structural damage. If the water is pumped completely in a short period of time, pressure from water-saturated soil on the outside could cause basement walls to collapse.

Evaluate utilities:

- If power lines are down outside your home, do not step in puddles or standing water.
- Do not turn the electricity back on in your home or business if you detect a gas leak or if the electrical system has been flooded.
- Look for electrical system damage. If you see sparks, broken or frayed wires or if you smell burning insulation, leave the house and call the fire department.
- Check for gas leaks. If you smell gas or hear a blowing or hissing noise, open a window and quickly leave the building. Turn off the gas at the outside main valve if you can and call the gas company from a neighbor's home or cell phone. If you turn off the gas for any reason, it must be turned back on by a professional.
- Check for sewage and water line damage. If you suspect sewage lines are damaged, avoid using the toilets and call a plumber. If water pipes are damaged, contact the water company or call a plumber and avoid using water from the tap.

Floods

- Service damaged septic tanks, cesspools, pits and leaching systems as soon as possible. Damaged sewage systems are health hazards. Contact your local health department before making repairs to septic systems.
- Report broken utility lines to the appropriate authorities. Reporting potential hazards will get the utilities turned off as quickly as possible, preventing further hazard and injury. Check with your utility company about where broken lines should be reported.

Pre-empt disease:

Clean and disinfect everything that was touched by floodwaters or mudflow and throw out food.

- Confirm the water supply is safe to drink. Listen to news reports to learn whether the community's water supply has been contaminated by the floodwaters.
- Contaminated water may not be safe to drink, clean with or bathe in. Use only bottled, boiled or treated water until your water supply is tested and found safe.
- If water is of questionable purity, boil or add bleach and distill drinking water before using. Wells inundated by floodwaters should be pumped out and the water tested for purity before drinking. If in doubt, call your local public health authority. Ill health effects often occur when people drink water contaminated with bacteria and germs. See http://www.IN.gov/dhs/files/water_treatment.pdf for more information.
- Throw away food that has come in contact with floodwaters. Some canned foods may be salvageable. If the cans are dented or damaged, throw them away. Food contaminated by floodwaters can cause severe infection. When in doubt, throw it out.

Cleaning Up

Remember that flood dangers do not end when the water begins to recede. Although the desire to return home to evaluate damage and begin the recovery process is understandable, you should return to your home, office, or any building ONLY when authorities indicate it is safe to do so.

The process of cleaning up your home, office or other building space after a flood can be a stressful experience, and the job can seem overwhelming. It is important to remain calm and try to keep the recovery process in perspective. You will not be able to do everything you need to do to recover all at once, but you can take steps toward that end. Try to focus on one task at a time and just do the next

Floods

thing. For more information and help, see the Red Cross guide *Repairing Your Flooded Home* at https://www.crossnet.org/services/disaster/0,1082,0_570_00.html.

General tips and techniques:

- Protect yourself during the cleaning process by wearing protective clothing such as boots, gloves and masks.
- Anyone who sustains an injury from materials affected by floodwaters should seek immediate medical attention.
- Dehumidify as soon as possible after a flood. Open windows and doors during the clean up process and leave them open for at least 24 hours.
- Clean and dry wet light fixtures before turning the electricity back on.
- For household cleaning after floodwater contamination, disinfect all surfaces with a bleach solution of ¼ cup chlorine bleach to one gallon of water.
- Items that cannot be salvaged after a flood must be thrown away including wet ceiling tiles, paper products, baseboards, gypsum board (aka, drywall) and insulation.
- Mattresses or other large items soaked with floodwater will probably have to be discarded. Some mattresses can be salvaged after disinfecting and air-drying.
- Materials such as cleaning products, paint, batteries, contaminated fuel and damaged fuel containers are hazardous. Check with local authorities for assistance with disposal.
- Service damaged septic tanks, cesspools, pit and leaching systems as soon as possible. Damaged sewage systems are a serious health hazard.
- Prevent mold growth by washing all surface areas in the house that came in contact with floodwater. Disinfect and wipe surfaces dry with paper towels to minimize bacterial contamination.
- Seal moldy trash in plastic bags and remove them immediately. Objects you can save should be dried or frozen as soon as possible. Freezing will stall mold growth, although it will not kill it.
- For more information, see <http://www.IN.gov/isdh/23581.htm>, <http://www.fema.gov/hazard/flood>.

Buildings subjected to floods:

Floods

- Buildings which have been flooded should be examined carefully before being used for living quarters to make sure they are safe and will not collapse. Loose plaster should be removed from the walls and ceilings so that it will not fall on occupants. Swollen doors and window sashes should be removed and allowed to thoroughly dry.
- If water remains in the basement, it should be drained or pumped out as soon as possible. As the water is being removed, the mud should be stirred and carried away with it. After the basement has been allowed to thoroughly dry, floors and walls should be washed down with a solution of one pound of chloride or lime to six gallons of water or with a solution prepared from a commercial laundry bleach containing chlorine. Laundry bleaches, having 5.25% sodium hypochlorite, are good for this purpose.
- For use in basements, as mentioned above, add one part of liquid chlorine laundry bleach to nine parts of water. Keep windows open for ventilation. Chlorine solutions are corrosive and should be mixed in plastic containers, enamel-lined metal pails or pans or stoneware crocks. Do not apply solution to metal surfaces. Follow precautions printed on the chlorine container.

Walls, woodwork and floors:

- Walls and woodwork, while still damp, should be thoroughly scrubbed with a stiff fiber brush and rinsed with water to remove all mud and silt. Particular attention should be given to all corners, cracks and crevices which should receive careful scrubbing.
- Floors should be cleaned of all mud and dirt and allowed to thoroughly dry. Artificial heat may be used with caution, however the temperature should not get high enough to cause steam (vapor) to rise from the floor and cause buckling or warping.
- Redecorating should not be attempted for some time as it is useless to try to paint damp surfaces. Three or four months' drying time may be necessary before redecorating can be done satisfactorily.

Furnaces:

- All parts of the heating system exposed to floodwater should be thoroughly cleaned and dried. The smoke pipe and chimney should be inspected and cleaned, if necessary, and furnace doors or covers left open to ventilate the system.

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- Burners should be removed if possible; cleaned and allowed to dry to prevent rust and clogging of orifices.

Furniture and appliances:

- Furniture should be moved to the sunshine and fresh air. Drawer-slides and other working parts should be stacked separately and allowed to air dry. All mud and silt should then be removed. Care should be exercised to remove the furniture from the direct rays of the sun before it is subject to warping.
- Stoves and other metal fixtures should first have all mud and silt removed and wiped with an oiled rag, then polished or painted.

Rugs and carpets:

- Rugs and carpets should be stretched out on a flat surface and allowed to thoroughly dry with alternate turning to prevent mold; followed by beating, sweeping or vacuum cleaning.
- Rugs that require shampooing should be washed with commercial rug shampoo products or with a soap jelly, wiped off, rinsed with clean water and allowed to thoroughly dry.
- Soap jelly may be prepared by mixing one pint of mild soap powder or flakes with five parts of hot water and beaten with an eggbeater until a stiff lather is formed.
- Resizing may be done with a commercial or homemade material. Homemade sizing may be prepared by mixing one-half pound of granulated glue to one gallon of boiling water.
- Stretch the rug out flat where it will not be disturbed, apply with a wide brush and allow to thoroughly dry. When practical, upholstery may also be cleaned according to these procedures.

Clothing and bedding:

- Flood-soiled clothing and bedding require considerable care to obtain satisfactory results. All loose dirt should be brushed off, followed by thorough cleaning.

Important documents:

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- If the item is wet it should be rinsed gently in clear water first. Paper is fragile when wet so it should be supported. Blotting or brushing debris off is the preferable method. Attempts at debris removal should be executed with great care. If the mud/dirt has dried on the item it is okay to gently brush it off, but be aware that staining may have already occurred.
- You can place books, most photographic negatives and documents into a regular freezer as an interim measure to avoid the onset of mold until they can be dried completely and properly.
- For additional assistance contact the Indian State Archives Conservation Lab.

Books:

- Books should be allowed to dry carefully and slowly with alternate exposure to air and pressing. Toward the end of this treatment, books may be subjected to small amounts of artificial heat.
- Place plain paper towels in between sections of 15 pages or fewer and change out with dry paper towels as they become saturated.
- Smaller books can be stood on end on a flat surface with the pages fanned open to air dry. Only use this method if the book is strong enough to stand open in this manner.
- Books and magazines with clay-coated (glossy) paper must be opened so that every page remains separated while drying to avoid the pages becoming stuck together.
- If your book or magazine has pages that have dried in a block, it is unlikely that they will be able to be separated.

Photographs:

- Photographs should be removed from frames if they have not become stuck to the glass. If it has become stuck, you may be able to scan it through the glass and reprint it successfully.
- Place wax paper in between each photograph as they are drying, or lay the photographs out individually. Be aware that photographs may curl if dried in this manner, but can be flattened later
- If your photographs or negatives have dried and adhered together, it is probable that the photographic emulsions have bonded to each other. However, a trained photographic conservator may be able to reverse this damage. Call the American Institute for Conservation.

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Avoiding Indoor Air Quality Problems

During flood cleanup, the indoor air quality in your home or office may appear to be the least of your concerns. However, failure to remove contaminated materials and to reduce moisture and humidity can cause serious, long-term health risks. Standing water and wet materials are a breeding ground for microorganisms such as viruses, bacteria and mold. They can cause disease, trigger allergic reactions and continue to damage materials long after the flood. Read the following guidelines and visit:

https://www.crossnet.org/services/disaster/0,1082,0_570_00.html for additional information.

Dry out:

- Remove all standing water and dry out your home as soon as possible to pre-empt the spreading of diseases and allergic reactions.
- Standing water creates a wonderful habitat for microorganisms which can become airborne and be inhaled. Where floodwater contains sewage or decaying animal carcasses, infectious disease is of concern. Even when flooding is due to rainwater, the growth of microorganisms can cause allergic reactions in sensitive individuals.
- Be patient. The drying out process could take several weeks, and growth of microorganisms will continue as long as humidity is high.
- If the house is not dried out properly, a musty odor, signifying growth of microorganisms, can remain long after the flood.
- Materials that are wet and cannot be thoroughly cleaned and dried within 24-48 hours should be discarded, as they can remain a source of microbial growth.
- Remove and replace wallboard, fiberglass and wall-to-wall carpeting.
- Fiberboard, fibrous insulation and disposable filters should also be replaced, if they are present in your heating and air conditioning system and have contacted water.

Be cautious with cleaners:

- In most cases, common household cleaning products and disinfectants are used for the task of washing and disinfecting walls, floors, closets, shelves and the contents of the house.
- Disinfectants and sanitizers contain toxic substances the health effects of which greatly vary. Always read and follow label instructions carefully.

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- Provide fresh air by opening windows and doors.
- If it is safe for you to use electricity and the home is dry, use fans both during and after the use of disinfecting, cleaning and sanitizing products.
- Be careful mixing household cleaners and disinfectants together and check labels for cautions. Mixing certain types of products can produce toxic fumes resulting in injury or even death.

Avoid carbon monoxide poisoning:

- Carbon monoxide (CO) is a colorless, odorless gas that can be lethal at high levels. CO levels can build up rapidly if certain types of combustion devices (for example, gasoline-powered generators, camp stoves and lanterns or charcoal-burning devices) are used indoors.
- Do not use combustion devices designed for outdoor use indoors.

Avoid airborne asbestos:

- Elevated concentrations of airborne asbestos can occur if asbestos-containing materials present in the home are disturbed. Airborne asbestos can cause lung cancer and mesothelioma, a cancer of the chest and abdominal linings.
- If you know or suspect that your home contains asbestos, contact the EPA TSCA Assistance Information Service at (202) 554-1404 for information on steps you should take to avoid exposure.

Avoid lead dust:

- Lead is a highly toxic metal which produces a range of adverse health effects, particularly in young children. Disturbance or removal of materials containing lead-based paint may result in elevated concentrations of lead dust in the air.
- If you know or suspect that your home contains lead-based paint, contact the National Lead Information Center to receive a general information packet, or ask questions.

Floods

Protecting Yourself from Mold

Disaster recovery and health officials warn that victims of flooding should clean flood-damaged homes thoroughly now to avoid possible health problems from mold and mildew in the months ahead. Care must be taken to clean and completely dry any area of the home wet from floodwaters to prevent structural damage and adverse health effects from mold and mildew. Dampness in walls, carpets, insulation and wood caused by flooding provides an environment for mold to flourish. These materials should be discarded if they become saturated.

Identifying mold:

- Mold is a microscopic organism found indoors and outdoors. When mold is present in large quantities it can cause allergic symptoms similar to those caused by plant pollen.
- Mold can often be seen and smelled. Sometimes it appears in the form of splotchy discoloration, ranging from white to orange or from green to brown or black. Its odor is earthy or musty.

Mold problems:

- When large amounts of mold are present, they can trigger allergic reactions, asthma episodes, infections and other respiratory problems.
- Exposure can cause development of an allergy to mold resulting in long-term health problems.
- Infants, children, elderly, immune-compromised individuals, pregnant women and individuals with respiratory conditions such as allergies, multiple chemical sensitivity and asthma are at higher risk for adverse health effects from mold.
- People who are sensitive to mold may experience stuffy nose, irritated eyes, wheezing or skin irritation.
- People allergic to mold may have difficulty breathing or shortness of breath.
- People with weakened immune systems and with chronic lung diseases, such as obstructive lung diseases, may develop mold infections in their lungs.
- If you or your family members have health problems after exposure to mold, contact your doctor or other health care provider.

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- Mold can also cause structural damage. When wood goes through a period of wetting, then drying, it can eventually warp and cause walls to crack or become structurally weak.
- Mold can also ruin paper and fabric.

What to clean:

- As a general rule, if mold can be seen or smelled, steps should be taken to eliminate the excess moisture at its source and to clean up and remove the mold. Use caution because inhaling mold spores can cause illness.
- Remove or thoroughly clean all items that have been wet for more than 48 hours.
- Remove porous materials such as paper, rags, plaster, ceiling tiles, wallboard/drywall, carpeting and wood products. Harder materials such as glass, plastic and metal can be kept after they are cleaned and disinfected.
- If drywall is flooded, take it off the wall at least 12 inches above the highest water mark.
- If the mold is in high concentrations, disposal of carpeting should be considered because drying does not remove dead mold spores.

Cleaning mold:

- Spraying with bleach or other mold retardant or simply painting over the mold only masks the problem and does not stop mold growth.
- Use a breathing mask or respirator, wear rubber gloves and take breaks in a well-ventilated area while cleaning or removing moldy objects. Inhaling mold spores can cause illness.
- Clean mold with non-ammonia soap, detergent or a commercial cleaner mixed in hot water.
- Scrub the entire area affected by mold with a stiff brush or cleaning pad and then rinse with clean water.
- After thoroughly cleaning and rinsing, disinfect the area with a solution of no more than one cup of household bleach per gallon of water.
- Let the disinfected areas dry naturally overnight to kill all mold.
- NEVER mix bleach with ammonia because the fumes are toxic.

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Salvaging Food

As a result of flooded conditions in homes, large quantities of foodstuffs may be submerged in floodwater or sewerage backflow. While efforts may be made to salvage some of these foods, many items cannot be safely consumed and should be destroyed. The following precautions are offered as a guide by the Indiana Department of Health in the salvaging of flood-contaminated foods and containers.

As a general rule, food should not be salvaged unless it is in a container that protects it and is one which can be thoroughly cleaned with soap and water and sterilized with boiling water or chlorine. Since paper, cardboard, wood and most plastic food containers are not waterproof; foods in such containers that have been under floodwater should be destroyed. These include water bottles, plastic utensils and baby bottle nipples.

Food in sealed metal cans: Remove labels. Thoroughly wash in soapy water by scrubbing with a brush. Immerse containers in a strong chlorine solution (100ppm chlorine) for 15 minutes. Make the solution by adding an ounce of chlorine-type laundry bleach to a gallon of clean water. Verify that all containers are thoroughly dry to prevent rusting.

Bottled foods (carbonated beverages, milk, ketchup, olives and similar foods): These foods will usually contain contaminated water if submerged. Even if contaminated water has not entered the containers, they cannot be safely cleaned because all filth cannot be removed from under the edge of the closure. Such foods should be destroyed.

Destroy. Do not salvage:

- Fresh fruits and vegetables.
- Cereals, flour, cornmeal, etc.
- Meats, poultry, fish. This does not apply to canned meats, fish and poultry which may be salvaged as any other "canned food."
- Lard, butter, oleo. Fats in undamaged hermetically sealed cans may be salvaged as outlined in "canned food" instructions above.

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- Sugar, coffee, tea, eggs. If these foods are in hermetically sealed cans, they may be salvaged as outlined in "canned food" instructions.

Restoring Septic Systems

Once floodwaters have receded, the Indiana Department of Environmental Management urges homeowners to remember to check for sewage and water line damage the first time you return to a flooded home or other building. If you suspect that sewage lines are damaged, avoid using the toilets and call a plumber. Service damaged septic tanks, cesspools, pits and leaching systems as soon as possible. Damaged sewage systems are health hazards, so contact your local health department before making repairs to septic systems.

Please contact your local health department for additional advice and assistance. For more information on onsite/decentralized wastewater systems, call the National Environmental Services Center at (800) 624-8301 or visit their website at www.nesc.wvu.edu.

General precautions:

- Do not drink well water until it is tested. Contact your local health department.
- Do not use the sewage system until water in the soil absorption field is lower than the water level around the house.
- Have your septic tank professionally inspected and serviced if you suspect damage. Signs of damage include settling or an inability to accept water. Most septic tanks are not damaged by flooding since they are below ground and completely covered. However, septic tanks and pump chambers can fill with silt and debris and must be professionally cleaned. If the soil absorption field is clogged with silt, a new system may have to be installed.
- Only trained specialists should clean or repair septic tanks because tanks may contain dangerous gases. Contact your health department for a list of septic system contractors who work in your area.
- Prevent silt from entering septic systems that have pump chambers. When the pump chambers are flooded, silt has a tendency to settle in the chambers and will clog the drain field if it is not removed.

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Do NOT:

- Do not use the system if the soil is saturated and flooded. The wastewater will not be treated and will become a source of pollution. Conserve water as much as possible while the system restores itself and the water table falls.
- Do NOT pump the tank during flooded or saturated drain field conditions. At best, pumping the tanks is only a temporary solution. Under worst conditions, pumping it out could cause the tank to try to float out of the ground and may damage the inlet and outlet pipes. Likewise, recently installed systems may “pop out” of the ground more readily than older systems because the soil has not had enough time to settle and compact.
- Remember, whenever the water table is high or your sewage system is threatened by flooding there is a risk that sewage will back up into your home. The only way to prevent this backup is to relieve pressure on the system by using it less.

If the septic system is flooded:

- Pump the septic system as soon as possible AFTER the flood. Be sure to pump both the tank and lift station. This will remove silt and debris that may have washed into the system.
- Flooding of the septic tank will have lifted the floating crust of fats and grease in the septic tank. Some of this scum may have floated and/or partially plugged the outlet tee. If the septic system backs up into the house check the tank first for outlet blockage. Clean up any floodwater in the house without dumping it into the sink or toilet and allow enough time for the water to recede. Floodwaters from the house that are passed through or pumped through the septic tank will cause higher flows through the system. This may cause solids to transfer from the septic tank to the drain field and will cause clogging.
- Aerobic plants, up flow filters, trickling filters and other media filters have a tendency to clog due to mud and sediment. These systems will need to be washed and raked.
- Do not dig into the tank or drain field area while the soil is still wet or flooded. Try to avoid any work on or around the disposal field with heavy machinery while the soil is still wet. These activities will ruin the soil conductivity.

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- Do not compact the soil over the soil absorption field by driving or operating equipment in the area. Saturated soil is especially susceptible to compaction, which can reduce the soil absorption field's ability to treat wastewater and lead to system failure.
- Check the vegetation over your septic tank and soil absorption field. Repair erosion damage and sod or reseed areas as necessary to provide turf grass cover.
- If sewage has backed up into the basement, clean the area and disinfect the floor. Use a chlorine solution of a half cup of chlorine bleach to each gallon of water to disinfect the area thoroughly.
- Be sure the septic tanks manhole cover is secure and that inspection ports have not been blocked or damaged.
- Locate any electrical or mechanical devices the system may have that could be flooded and avoid contact with them until they are dry and clean.

In addition to raw sewage, small businesses may use their septic system to dispose of wastewater containing chemicals. If your chemical receiving septic system backs up into a basement or drain field take extra precautions to prevent skin, eye and inhalation contact. The proper cleanup depends on what chemicals are found in the wastewater. Contact your State or Environmental Protection Agency (EPA) for specific cleanup information.

Disinfecting Wells

The following instructions from the Indiana Department of Health are used for the disinfection or treatment of wells and private water sources that have been subjected to floodwater, or other possible sources of contamination. If the well casing is submerged in floodwater, **DO NOT USE THE WATER**. Water from submerged wells cannot be safely sanitized. When floodwaters recede, small quantities may be disinfected until the well can be properly chlorinated. Remember that no water should be used for drinking or food preparation, unless it is first boiled or treated until a satisfactory report is obtained from a laboratory. The safety of water cannot be judged by color, odor or taste. The organisms that cause water-borne disease cannot be seen. Individuals can have a private lab test their well water samples. The lab will analyze the sample and return the results to the collector, usually within 72 hours. The cost for this service will likely be between \$25 and \$30. See

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<http://www.in.gov/isdh/22450.htm> for a list of Indiana-certified Microbiology Drinking Water Labs. Contact your local health department or sanitary engineering department for assistance or advice.

After floodwaters recede, or the cause of contamination is eliminated, wells can be disinfected with chlorine. A convenient form to use is sold commercially in grocery or other stores as liquid chlorine laundry bleach. Most of these products contain 5.25% solution or more of sodium hypochlorite when fresh, and is equivalent to 5% available chlorine.

The quantity of chlorine solution needed to disinfect a well is based upon 100 parts of chlorine to a million parts of water. To eliminate mathematical calculations, it is safe to use the following quantities and methods to disinfect the different types, sizes, and depths of wells and water sources:

Drilled or driven wells:

- Use one quart of the commercial 5% chlorine solution for each 100 feet of well depth in a drilled well which is four inches in diameter. For two-inch driven wells or smaller, add one cup for each 25 feet of water.
- The measured solution should be diluted with water to make about three gallons. Water drawn from the contaminated well is suitable for this purpose.
- Pour the diluted chlorine solution directly into the casing of a single tubular well, or into the annular space between the outer casing and the drop pipe of a double tubular well.
- If the well is sealed and the pump drop pipe is not equipped with a foot valve at the bottom and does not have a cylinder in the way, it is also possible to pour the solution down through the pump and drop pipe.

Dug wells:

- Dug wells which have become contaminated should first be pumped dry, cleaned and the walls scrubbed down. If it is not possible to pump the well dry, the pumping should be continued until the water becomes clear. The well should then be allowed to fill, and if the water is still not clear, it should be pumped out again.
- When the water is clear, the well should be disinfected using the following quantities of 5% chlorine solution for each foot of depth of water in the well:

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<u>Diameter of well</u>	<u>Quantity 5% chlorine bleach</u>
<u>1 to 3 feet</u>	<u>1.5 cups</u>
<u>4 feet</u>	<u>3 cups</u>
<u>5 feet</u>	<u>4.5 cups</u>
<u>6 feet</u>	<u>6 cups</u>
<u>8 feet</u>	<u>12 cups</u>
<u>10 feet</u>	<u>18 cups</u>

- Add this quantity of chlorine bleach directly into the well interior.

Cisterns:

- Spring collection, basins or drinking water storage tanks should be disinfected in the same manner as dug wells. Pump out or drain the water in the cistern; scrub down the interior walls; fill or allow the tank to refill with clear water; and, if it is not known, calculate the capacity of the tank or containment by using one of the following formulas:
- Square or rectangular tank measure in feet:
 - $\text{Capacity (gallons)} = \text{length} \times \text{width} \times \text{depth} \times 7.5$
- Cylindrical tank measure in feet:
- $\text{Capacity (gallons)} = \text{diameter} \times \text{diameter} \times \text{length} \times 5.9$
 - Add the amount of 5% chlorine solution indicated in the following table:

<u>Capacity (gallons)</u>	<u>Quantity of 5 % chlorine bleach</u>
<u>500</u>	<u>5 quarts</u>
<u>750</u>	<u>7.5 quarts</u>

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1,000	10 quarts
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2,000	20 quarts
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4,000	40 quarts
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- This amount of chlorine bleach should be poured directly into the cistern or storage tank.
- After the well, cistern or storage tank has been dosed with the appropriate amount of chlorine, it should be pumped just long enough to bring the treated water through the pump to all faucets on the distribution system.
- The odor at the faucets will be a good test to indicate chlorine presence. If the above dosages do not produce an obvious chlorine odor in the water, add more chlorine bleach solution until a distinct odor is noticed.
- Let the chlorinated well and distribution systems stand for 12 to 24 hours. This will allow time for the chlorine solution to disinfect the well or water source and distribution system.
- After at least 12 hours, the system should be pumped until no further trace of chlorine is noticeable in the water.
- If you have public or municipal sewers, run each tap until the disinfectant odor disappears, while allowing the water to go down the fixture drain.
- If you have a septic system, it is preferable to first connect a garden hose to an outside faucet or hydrant and run the water into a roadside ditch or drainage swale, until the disinfectant odor disappears. Then, turn on each water faucet to discharge the chlorine residual in the immediate vicinity of the faucet.
- Following disinfection of the water supply system, the water should be sampled for bacteriological analysis.

Flood-related Crop Damage

As one of nature's most powerful forces, large quantities of water can leave behind a very chaotic and overwhelming scene. It is important to remain calm and try to keep the recovery process in perspective. You cannot do everything you need to do to recover all at once, but you can take steps toward that end.

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Report:

- Review the Indiana Disaster Assistance for Agriculture checklist at <http://www.in.gov/isda>,
- Report all livestock, crop and equipment losses to the local United States Department of Agriculture Farm Services Agency office as soon as reasonably possible. This information will be needed to support state government requests for agricultural disaster declaration.
- Remedy flood-related hazards. Debris may be washed into pastures or farm land. Fences may be damaged or destroyed.
- Wet feed and grain will heat and mold very quickly, leading to spoilage and the threat of spontaneous combustion.
- Until tested, wet feed should be presumed harmful to animals. Feedstuffs may contain contaminants from floodwaters and/or mold spores that sometimes produce dangerous toxins.
- Silage should be disposed of in a proper manner. Damp silage has an increased risk of mycotoxin contamination due to poor fermentation, and may also contain higher levels of coliform bacteria.
- As soon as possible, dry grain should be removed and stored separately.
- Dry bales of hay should be moved and restacked in a dry location.
- Producers may send samples of feed and silage to either of Indiana's Animal Disease Diagnostic Laboratories at Purdue University and in Dubois, IN, to test for aflatoxins and mycotoxins.
- For assistance with feed or chemicals affected by flooding, contact the Office of the Indiana State Chemist at <http://www.isco.purdue.edu>.
- To report or request assistance regarding a manure or chemical spill, contact the Indiana Department of Environmental Management.

Get Flood Insurance

Flood insurance is available through approximately 90 insurance companies in more than 20,300 participating communities nationwide and through the National Flood Insurance Program (NFIP). Ninety percent of all natural disasters in the United States involve some degree of flooding. Yet, most homeowners' insurance policies do not cover flooding. Since even a few inches of water can cause extensive, costly damage, buying flood insurance can provide protection and peace of mind. Flood

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insurance is available to everyone, not just homeowners. Renters can buy policies that cover their belongings inside a rental unit. Businesses also can cover their properties and contents.

Hoosiers know that flood insurance can protect against financial devastation, but insurance agents may not be as familiar with flood insurance policies as they are with the other types of policies they offer. Therefore, knowing as much as possible about the coverage of different types of policies is critical to getting the most out of it.

Know why to be insured:

- Compared to fire, people in floodplains are four times more likely to have a flood during the course of a 30-year mortgage.
- Most homeowners, renters and business insurance policies do NOT cover flood damage.
- More than 25% of flood insurance claims occur in areas outside identified Special Flood Hazard Areas, so property owners who do not live near bodies of water should not be lulled into a false sense of security.
- Flood insurance coverage is available for qualifying structures and their contents whether or not the structure is in a high risk area.

Know the differences between flood insurance and disaster assistance:

- The Federal Emergency Management Agency (FEMA) provides aid only in presidentially declared disasters, but flood insurance covers flood damage irrespective of disaster declarations.
- Federal disaster assistance declarations are issued in less than 50% of flooding events.
- If you are uninsured and receive federal disaster assistance after a flood, you must purchase flood insurance to remain eligible for future disaster relief.
- Disaster assistance does not cover as much as flood insurance, and flood insurance claims can be paid very rapidly after the event.
- Flood insurance never has to be repaid, unlike a federal disaster loan.
- Policies are covered by policy holders' premiums, while tax dollars fund federal disaster relief.

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Know how to get flood insurance:

- Flood insurance is sold separately from homeowners insurance and not all agencies offer it, but those who do are backed by the federal government. Flood insurance is also available through the NFIP as long as your community participates in the program.
- Flood insurance is available from any licensed insurance agent or through NFIP by calling 1-800-427-4661.
- There is usually a 30-day waiting period from the date of purchase before a new flood policy goes into effect.

Know what protection is available:

- Flood insurance protects against losses to buildings and their contents, NOT the land itself.
- To be considered a flood, the waters must cover at least two acres or affect at least two properties.
- Different types of policies are available depending on flood risk. A property's flood risk is shown on flood hazard maps available at www.floodsmart.gov.
- If you live in a high-risk area, you will need a Standard Policy available to communities that participate in the NFIP. Most mortgage lenders will require you have such a policy before they will approve your loan. Building and contents coverage must be applied for separately under a Standard Policy.
- If your home is in a low or moderate risk zone, talk to your flood insurance agent about a low-cost Preferred Risk Policy. Preferred Risk Policies have options for buildings and/or contents.
- Because premium rates for flood insurance are based on flood risk, your neighbor's property may be in a different risk category than your own and they may have a different premium. However, the insurance rate is the same nationwide for properties in the same risk category.
- Home and business owners should purchase coverage on both structure and contents.
- Renters should purchase contents insurance.
- Each structure on a property must have its own insurance policy. That means a separate policy is required for a detached garage, guest house or any other structure you wish to protect. Additional, separate policies also are required to insure the contents of each structure.

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Flood Insurance Claim and Repair Process

Flood insurance protects what for most people is the single most important financial asset, their home or business. Homeowners can include contents coverage in their policies. Residential and commercial renters who purchase flood insurance coverage for their buildings and contents/inventory are protecting their livelihoods. Filing an insurance claim or repairing flood damage to a home or building can be a daunting task for any home or business owner. The following tips will help clarify the process of filing a claim and working with a contractor to repair the damage.

Preparing to file a claim:

- Separate damaged items from undamaged items. If necessary, place items outside the home or business.
- Local officials may require the disposal of damaged items. Keep a swatch or other sample of the damaged items for the adjuster.
- Make a list of damaged or lost items and include the age and value where possible. If possible, supply receipts for those lost items to the adjuster. This is not only required by the policy but is necessary for the adjuster to investigate and settle your claim.
- If you have damage estimates prepared by a contractor(s), provide them to the adjuster since they will be considered in the preparation of your repair estimate.
- Take photos of any water in the house and damaged personal property as evidence for the adjuster to use to prepare your repair estimate.
- Take a photo inventory of your personal property, such as clothes, jewelry, furniture, computers and audio/video equipment. Photos and video of your home, as well as sales receipts and the model and serial numbers of items, will make filing a claim simpler.
- Policies require that you cooperate with the adjuster or representative in the investigation of your claim. Within 60 days of loss, you will need to file a “proof of loss,” which is your signed and sworn statement of the amount you are claiming under your policy. The adjuster assigned to your loss or your agent can assist you with this.

Filing a claim:

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- A flood insurance policyholder should immediately report any flood loss to their insurance company or agent. An insurance claims adjuster will be assigned to inspect the structure, estimate the cost of repairs and send the estimate to the insurance company for review and payment approval.
- Call your insurance company if an adjuster has not been assigned to you within several days.
- A policyholder will be required to submit a proof of loss as part of the claim package. A proof of loss is the policyholder's valuation of the damages and is a sworn statement made by the policyholder substantiating the insurance claim. The proof of loss is required within 60 days of the loss.
- Proof of loss will be required on both the building loss and the contents should there be coverage for both. The insurance company will usually provide a proof of loss form and in most cases prepare the form based on the adjuster's estimate of repair costs.

Damage estimate discrepancies between you and the adjuster:

- A policyholder who disagrees with the final figures can submit his/her own "proof of loss" or when signing and returning the company's proof of loss, simply send a letter outlining why he/she does not agree with the amount offered by the company. It is essential the document be sent to the insurance company because until the proof of loss package is received, the insurance company will be unable to issue a payment to the insured.
- An important point to keep in mind is that the policyholder does not have to accept the initial estimate of the damage prepared by a claims adjuster. If the policyholder believes the claims adjuster did not cover all damages in the estimate, the policyholder can make claim for the additional damages as long as the additional losses are claimed in the proof of loss and submitted within 60 days of the loss.
- Insurance company adjusters, independent adjusters and repair contractors all use software programs developed to write itemized estimates on repair of structures. If an insurance company and the contractor are in agreement on the repairs needed, there should be little difference in the final cost of the repairs. These estimating programs are based on national data which is continuously updated with material and labor costs in different areas of the country so they stay up-to-date.

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Damage estimate discrepancies between the adjuster and the contractor(s):

Discrepancies between a contractor's price for repairs and an insurance adjuster's estimate could happen for several reasons:

- Remote areas raise problems with calculating repair costs because there are few, if any local contractors. When contractors are forced to drive long distances to make repairs, labor costs rise.
- Disasters may create a spike in material costs due to shortages and demand.
- The adjuster may have missed damage during the inspection process or damage was hidden from view. These oversights may require a second inspection.
- Although it is rare, there have been cases of some repair contractors taking advantage of disaster situations to inflate repair costs.
- If a policyholder finds their contractor's estimate is more than the claims adjuster's estimate, the policyholder needs to notify the insurance company immediately so the claims adjuster can meet with the contractor to resolve whatever differences there may be.

Flood Insurance Consumer Alert

Unfortunately, many home and business owners do not find out until it is too late that their homeowners' and business insurance policies do NOT cover flooding. Hoosiers know that flood insurance can protect against financial devastation, but insurance agents may not be as familiar with flood insurance policies as they are with the other types of policies they offer. Therefore, knowing as much as possible about the coverage of different types of policies is critical to getting the most out of it. These tips from the Indiana Department of Insurance will help give you the information you need to decide whether to invest.

Flood defined:

- A flood is an excess of water (or mud) on land that is normally dry. The National Flood Insurance Program (NFIP) defines a flood as a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area; or of two or more properties (at least one of which is the policyholder's property) from overflow of inland or tidal

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waters; unusual and rapid accumulation of surface waters from any source; mudflow; or collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining, caused by waves or currents of water exceeding anticipated cyclical levels.

Homeowners' insurance coverage:

- Homeowners' insurance policies generally will NOT cover flood losses. Some companies offer a Hydrostatic Pressure Endorsement to insure your property for the increased exertion of water on the foundation of your structure, which is a condition frequently accompanying the rising waters of a flood however, most of these endorsements only cover collapse of the structure due to hydrostatic pressure and do not insure for damage, other than building collapse, due to hydrostatic pressure accompanying the flood.
- Some homeowners' insurance policies provide coverage caused by the backup of sewers or drains; however, most (but not all) sewer and drain coverage provisions exclude backup as a result of flood and most limit payment for loss from sewer and drain backup to varying amounts (usually less than \$5,000).
- If you insure certain property (examples: antiques, firearms, jewelry, camera equipment, objects of art, etc.) under a scheduled property floater (usually an endorsement to your homeowners' policy), these specifically listed items may be covered for loss by flood. Review your policy to make sure.

Automobile insurance coverage:

- On your automobile policy, if you carry "Other than Collision" coverage (formerly called Comprehensive Coverage) on these vehicles, the flood damage to your auto, SUV or motorcycle should be covered up to the actual cash value at the time of loss, less the deductible amount.
- If you are carrying towing and road service coverage as part of your auto policy, you may also be covered for the removal of your vehicle from the flooded area.

Mortgage requirements:

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- Most mortgage lenders will require you have a flood insurance policy before they will approve your loan, however, do not confuse any contractual obligations between you and your mortgage company with the flood exposure you may face. Even if your mortgage company does not require you to purchase flood insurance this does not mean you are immune from experiencing a flood loss. If there are any conditions that could cause you to experience flood damaging your property, consider how you would pay for such a loss.

Flood insurance:

- You can purchase flood insurance for your home or business, regardless of whether the property is in or out of a floodplain, directly from your property and casualty insurance agent or insurance company if your community participates in the NFIP.
- To find out if your community participates, visit <http://www.fema.gov/cis/IN.pdf>. Your insurance agent or insurance company also can confirm whether flood insurance is available to you and what it will cost.

NFIP flood maps:

- Flood maps are the tool the Federal Emergency Management Agency (FEMA) uses to determine the flood risk that homeowners face. Prior to the National Flood Insurance Program (NFIP), homeowners had no way to protect themselves from the devastation of flooding. In many parts of the United States unchecked development in the floodplain was increasing the flood risk. Today, such maps and other resources and information are readily available to homeowners through the Map Service Center (MSC).
- Visit <http://msc.fema.gov> and see the freely downloadable how-to guide to create FIRMettes.
- FIRMettes are full-scale sections of a FEMA Flood Insurance Rate Map (FIRM) that you create yourself online by selecting the desired area from an image of a FIRM. There is no charge for making a FIRMette, and because it is a full-scale section of an official FEMA FIRM, it can be used in all aspects of the NFIP, including floodplain management, flood insurance and enforcement of mandatory flood insurance purchase requirements.

For more information on flood insurance, visit <http://www.fema.gov/business/nfip/>, or contact the Indiana Department of Insurance at (800) 622-4461, or www.in.gov/idoi.

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National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP) was created in 1968 to make federally backed flood insurance available to property owners, renters and businesses in participating communities. Ninety percent of all natural disasters in the United States involve some degree of flooding. Since even a few inches of water can cause extensive, costly damage, buying flood insurance can provide protection and peace of mind.

Unfortunately, many home and business owners do not find out until it is too late that their homeowners' and business insurance policies do NOT cover flooding. The NFIP offers a separate policy that protects what for most people is the single most important financial asset, their home or business. Homeowners can include contents coverage in their NFIP policy. Residential and commercial renters can purchase flood insurance coverage for their buildings and contents/inventory and thus protect their livelihoods.

Eligibility:

- Homeowners, business owners and renters all can purchase flood insurance as long as their community participates in the NFIP.
- More than 20,300 communities nationwide now participate in the NFIP.
- Contact local government officials or visit www.floodsmart.gov to determine whether your community participates in the NFIP.
- Residents do not have to live in a floodplain or a mapped flood zone to buy flood insurance. More than 25% of flood insurance claims come from medium- or low-risk flood areas.
- Even if your residence or business has been flooded before, you are still eligible to purchase a flood insurance policy provided your community is participating in the NFIP.
- You can purchase National Flood Insurance at any time. There is usually a 30-day waiting period after you buy flood insurance before the policy is effective. In most cases, the policy does not cover a "loss in progress," which is defined as a loss occurring as of midnight on the first day your policy goes into effect. Essentially, if you buy flood insurance after a flood, it will NOT cover your past losses, only losses after the policy goes into effect.

Coverage:

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- Single-family homes can be insured for up to \$250,000 and up to an additional \$100,000 in contents coverage.
- Condominium unit owners can get up to \$250,000 in structural coverage and up to \$100,000 in contents coverage.
- Renters can get up to \$100,000 in contents coverage.
- Businesses can get up to \$500,000 in commercial structural coverage and up to \$500,000 in contents coverage.
- Home-based business owners need to purchase separate coverage for the business and/or contents. Coverage is not automatically included under a homeowner's flood insurance policy, even if the business is located inside the home.
- While basement improvements such as finished walls, floors and personal belongings in a basement are not covered by flood insurance, structural elements and essential equipment within a basement are. The following items are covered under building coverage as long as they are connected to a power source, if required, and installed in their functioning location:
 - Sump pumps
 - Well water tanks and pumps, cisterns and the water in them
 - Oil tanks and the oil in them
 - Natural gas tanks and the gas in them
 - Pumps and/or tanks used in conjunction with solar energy
 - Furnaces, water heaters, air conditioners and heat pumps
 - Electrical junction and circuit breaker boxes and required utility connections
 - Foundation elements
 - Stairways, staircases, elevators and dumbwaiters
 - Unpainted drywall, walls and ceilings, including fiberglass insulation
 - Cost of cleanup.
- Flood insurance policies reimburse individuals for some actions taken to prevent flood damage. These actions can include moving the insured contents to a safe place and/or the cost of purchasing sandbags, plastic sheeting, lumber, pumps, etc.
- It will also pay up to \$30,000 to help pay flood plain ordinance compliance costs if the home has been damaged by a flood. This assistance is also known as Increased Cost of Compliance (ICC).

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Policies and premiums:

- Cost is determined in part by whether you live in a flood plain; also known as a Special Flood Hazard Area (SFHA). Local building officials should have maps showing these areas and residents can determine whether they are in a low, medium, or high-risk area by checking these maps. You may also want to visit www.floodsmart.gov.
- If you live in a high-risk area, you will need a Standard Policy available to communities that participate in the NFIP. Most mortgage lenders will require you have such a policy before they will approve your loan. Building and contents coverage must be applied for separately under a Standard Policy.
- If your home is in a low- or moderate-risk zone, your building may qualify for a low-cost, Preferred Risk Policy. Preferred Risk Policies have options for buildings and/or contents.
- Another way to reduce your premium is through an elevation rating. If the lowest floor of your house is above the base flood elevation (the predicted flood depth in your area), you can qualify for lower rates.